

Applicant: James E. Moon, et al.
 Serial No.: 09/698,329
 Filing Date: October 27, 2000
 For:

Att'y Docket No. 14917.1.1
 Group: 1741

INTEGRATED MONOLITHIC MICROFABRICATED ELECTROSPRAY AND
 LIQUID CHROMATOGRAPHY SYSTEM AND METHOD



INFORMATION DISCLOSURE CITATIONS MADE BY APPLICANT

U.S. Patent Documents

Examiner Initial*	Patent Number	Issue Date	Name	Class	Sub Class	Filing Date	
<u>AS</u>	A1	4,842,701	06/27/89	Smith, et al	204	180.1	04/06/87
<u>AS</u>	A2	5,182,366	01/26/93	Huebner, et al	530	334	05/15/90
<u>AS</u>	A3	5,641,400	06/24/97	Kaltenbach, et al	210	198.2	10/23/95
<u>AS</u>	A4	5,872,010	02/16/99	Karger, et al	436	173	07/03/96
<u>AS</u>	A5	5,917,184	06/29/99	Carson, et al	250	288	02/07/97
<u>AS</u>	A6	5,969,353	10/19/99	Hsieh	250	288	01/22/98
<u>AS</u>	A7	5,993,633	11/30/99	Smith, et al	204	601	07/31/97
<u>AS</u>	A8	5,994,696	11/30/99	Tai, et al	250	288	01/27/98

Other Documents

(including author (if listed), title, relevant pages, date of publication including at least month and year).

Examiner
Initial*

<u>AS</u>	A9	Amish Desai, Yu-Chong Tai, Michael T. Davis, and Terry D. Lee, "A MEMS Electrospray Nozzle for Mass Spectroscopy," 1997 International Conference in Solid-State Sensors and Actuators, Chicago, June 16-19, 1997, p. 927-930
<u>AS</u>	A10	David P. H. Smith, "The Electrohydrodynamic Atomization of Liquids," IEEE Transactions on Industry Applications, Vol. IA-22, No. 3, p. 527-535, May-June, 1986
<u>AS</u>	A11	Stephen C. Jacobson, Roland Hergenroder, Lance B. Koutny, and, J. Michael Ramsey, "High-Speed Separations on a Microchip," Anal. Chem., April 1, 1994, 66, 1114-1118
<u>AS</u>	A12	Stephen C. Jacobson, Roland Hergenroder, Lance B. Koutny, and, J. Michael Ramsey, "Open Channel Electrochromatography on a Microchip," Anal. Chem. 1994, 66, 2369-2373
<u>AS</u>	A13	D. Jed Harrison, Karl Fluri, Kurt Seiler, Zhonghui Fan, Carlo S. Effenhauser, and, Andreas Manz, "Micromachining a Miniaturized Capillary Electrophoresis-Based Chemical Analysis System on a Chip," Science, Vol. 261, August 1993, 895-897

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Date Considered:

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Sheet 2 of 2

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- AB A14 R.S. Ramsey and J.M. Ramsey, "Generating Electrospray from Microchip Devices Using Electroosmotic Pumping," Analytical Chemistry, Vol. 69, No. 6, March 15, 1997, p. 1174-1178
- AB A15 Matthias Wilm and Matthias Mann, "Analytical Properties of the Nanoelectrospray Ion Source," Analytical Chemistry, Vol. 68, No. 1, January 1, 1996, p. 1-8
- AB A16 Qifeng Xue, Frantisek Foret, Yuriy M. Dunayevskiy, Paul M. Zavacky, Nicol E. McGruer, and Barry L. Karger, "Multichannel Microchip Electrospray Mass Spectrometry," Analytical Chemistry, Vol. 69, No. 3, February 1, 1997, p. 426-430
- AB A17 Malcolm Dole, L.L. Mack, R.L. Hixes, R.C. Mobley, L.D. Ferguson, and M.B. Alice, "Molecular Beams of Macroions," The Journal of Chemical Physics, Volume 49, Number 5, September 1, 1968, p. 2240-2249
- AB A18 Masamichi Yamashita and John B. Fenn, Journal of Chemical Physics, Volume 88, 1984, p. 4451-4459

References Cited by Applicants

While the filing of Information Disclosure Statements is voluntary, the procedure is governed by the guidelines of Section 609 of the Manual of Patent Examining Procedure and 37 C.F.R. §§ 1.97 and 1.98. To be considered a proper Information Disclosure Statement, Form PTO-1449 shall be accompanied by a copy of each listed patent or publication or other item of information and a translation of the pertinent portions of foreign documents (if an existing translation is readily available to the applicant), an explanation of relevance of each reference not in the English language, and should be submitted in a timely manner as set out in MPEP Sec. 609.

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Examiner: Robert Soderquist

Date Considered: 9/16/02

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SUPPLEMENTAL INFORMATION DISCLOSURE CITATIONS MADE BY APPLICANT

U.S. Patent Documents

Examiner Initial*	Patent Number	Issue Date	Name	Class	Sub Class	Filing Date
<u>AS</u> A1	6,110,343	08/29/2000	Ramsey, et al.	204	601	10/04/96

References Cited by Applicants

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U.S. Patent Documents

Examiner Initial*	Patent Number	Issue Date	Name	Class	Sub Class	Filing Date
<u>AB</u> A1	4,480,259	10/30/84	Kruger, et al.	346	140	07/30/82
<u>AB</u> A2	4,489,259	12/18/84	White, et al.	318	696	04/29/82
<u>AB</u> A3	4,490,728	12/25/84	Vaught, et al.	346	1.1	10/07/82
<u>AB</u> A4	4,590,482	05/20/86	Hay, et al.	346	1.1	12/14/83
<u>AB</u> A5	5,162,650	11/10/92	Bier	250	288	01/25/91
<u>AB</u> A6	5,423,964	06/13/95	Smith, et al.	204	180	08/02/93
<u>AB</u> A7	5,481,110	01/02/96	Krishnaswamy, et al.	250	288	10/07/94
<u>AB</u> A8	5,501,883	03/26/96	Ishikawa, et al.	428	1	07/27/94
<u>AB</u> A9	5,523,566	06/04/96	Fuerstenau, et al.	250	282	07/20/94
<u>AB</u> A10	5,536,939	07/16/96	Freidhoff, et al.	250	281	10/07/94
<u>AB</u> A11	5,541,408	07/30/96	Sittler	250	288	02/17/95
<u>AB</u> A12	5,563,639	10/08/96	Cameron, et al.	347	34	10/30/94
<u>AB</u> A13	5,608,217	03/04/97	Franzen, et al.	250	288	03/10/95
<u>AB</u> A14	5,640,010	06/17/97	Twerenbold	250	281	05/11/95
<u>AB</u> A15	5,644,131	07/01/97	Hansen	250	292	05/22/96
<u>AB</u> A16	5,705,813	01/06/98	Apffel, et al.	250	288	11/01/95
<u>AB</u> A17	5,716,825	02/10/98	Hancock, et al.	435	286.5	11/01/95
<u>AB</u> A18	5,747,815	05/05/98	Young, et al.	250	423	07/24/96
<u>AB</u> A19	5,501,893	03/26/96	Laermer, et al.	428	161	11/27/93
<u>AB</u> A20	5,750,988	05/12/98	Apffel et al.	250	288	02/03/97

Examiner:

Anton S. S. S. S. S.

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No refs.

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U.S. Patent Documents

Examiner Initial*	Patent Number	Issue Date	Name	Class	Sub Class	Filing Date
<u>q8</u> A21	6,032,876	03/07/00	Bertsche et al.	239	418	12/01/98
<u>q8</u> A22	6,066,848	05/23/00	Kassel et al.	250	288	12/03/98

Foreign Patent Documents

Examiner Initial*	Document Number	Publ. Date	Country or Patent Office	Sub Class	Trans- lation
<u>q8</u> A23	EP259,796	01/03/96	Europe		N/A
<u>q8</u> A24	EP 565,027	03/05/97	Europe		N/A
<u>q8</u> A25	EP 588,952	09/01/99	Europe		N/A
<u>q8</u> A26	EP 677,322	10/18/95	Europe		N/A
<u>q8</u> A27	EP 692,713	01/17/96	Europe		N/A
<u>q8</u> A28	EP 860,858	08/26/98	Europe		N/A
<u>q8</u> A29	GB 2,287,356	09/13/95	Great Britain		N/A
<u>q8</u> A30	WO 00/52455	09/08/00	PCT		N/A
A31	PCT/US00/34999		PCT		N/A
A32	PCT/US01/01785		PCT		N/A

Other Documents

(including author (if listed), title, relevant pages, date of publication including at least month and year).

Examiner
Initial*

q8 A33 John H. Knox, "Theoretical Aspects of LC with Packed and Open Small-Bore Columns," Journal of Chromatographic Science, Vol. 18, September, 1980, pages 453-461.

q8 A34 James N. Alexander IV, "Development of a Nano-electrospray Mass Spectrometry Source

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Robert Soderquist 9/12/02
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Rapid *for Nanoscale Liquid Chromatography and Sheathless Capillary Electrophoresis,*
Communication in mass Spectrometry, 12, July, 1998, pages 1187-1191.

AB A35 Jörg P. Kutter, Stephen C. Jacobson, and J. Michael Ramsey, "Integrated Microchip Device with Electrokinetically Controlled Solvent Mixing for Isocratic and Gradient Elution in Micellar Electrokinetic Chromatography," Analytical Chemistry, Vol. 69, No. 24, December 1997, pages 5165-5171.

AB A36 Bing He, Niall Talt, Fred Regnier, "Fabrication on Nanocolumns for Liquid Chromatography," Analytical Chemistry, Vol. 70, No. 18, September, 1998, Pages 3790-3797.

AB A37 Matthias S. Wilm, Matthias Mann, "Electrospray and Taylor-Cone theory, Dole's beam of macromolecules at last?," International Journal of Mass Spectrometry and Ion Processes and Ion Processes, June, 1994, pages 167-180.

AB A38 David C. Gale and Richard D. Smith, "Small Volume and Low Flow-rate Electrospray Ionization Mass Spectrometry of Aqueous Samples," Rapid Communications in Mass Spectrometry, Vol. 7, September, 1993, pages 1017-1021.

AB A39 Richard B. Cole, "Electrospray Ionization Mass Spectrometry," John Wiley & Sons, Inc., 1997, pages 1-62.

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SUPPLEMENTAL INFORMATION DISCLOSURE CITATIONS MADE BY APPLICANTU.S. Patent Documents

Examiner Initial*	Patent Number	Issue Date	Name	Class	Sub Class	Filing Date
<u>AB</u> A1	6,245,227	June 12, 2001	Moon, et al.	210	198	10/17/1998

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U.S. Patent Documents

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<u>as</u> A1	3,538,744	11/10/760	Karasek	73	23.1	11/09/67
<u>as</u> A2	3,738,759	6/12/73	Dittrich, et al.	356	208	4/16/70
<u>as</u> A3	3,915,652	10/28/75	Natelson	23	259	12/16/74
<u>as</u> A4	4,056,324	11/1/77	Göhde	356	246	5/5/76
<u>as</u> A5	4,356,722	11/2/82	Bunce, et al.	73	53	11/5/80
<u>as</u> A6	4,366,118	12/28/82	Bunce, et al.	422	57	6/13/79
<u>as</u> A7	4,369,664	1/25/83	Bunce, et al.	73	864.12	10/24/80
<u>as</u> A8	4,459,267	7/10/84	Bunce, et al.	422	100	5/20/82
<u>as</u> A9	4,593,728	6/10/86	Whitehead, et al.	141	98	11/14/83
<u>as</u> A10	4,708,782	11/24/87	Andresen, et al.	204	299	9/15/86
<u>as</u> A11	4,879,097	11/7/89	Whitehead, et al.	422	67	4/4/86
<u>as</u> A12	4,891,120	1/2/90	Sethi, et al.	204	299	6/8/87
<u>as</u> A13	4,908,112	3/13/90	Pace	204	299	6/16/88
<u>as</u> A14	4,983,038	1/8/91	Ohki, et al.	356	246	4/7/88
<u>as</u> A15	4,999,493	3/12/91	Allen, et al.	250	288	4/24/90
<u>as</u> A16	5,015,845	5/14/91	Allen, et al.	250	288	6/1/90
<u>as</u> A17	5,110,745	5/5/92	Kricka, et al.	436	87	6/1/89
<u>as</u> A18	5,126,022	6/30/92	Soane, et al.	204	180.1	2/28/90
<u>as</u> A19	5,132,012	7/21/92	Miura, et al.	210	198.2	6/22/89

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<u>CB</u> A20	5,180,480	1/19/93	Manz	204	299	9/13/92
<u>CB</u> A21	5,245,185	9/14/93	Busch, et al	250	288	11/5/91
<u>CB</u> A22	5,269,900	12/14/93	Jorgenson, et al	204	299	9/13/90
<u>CB</u> A23	5,283,036	2/1/94	Hofmann, et al	422	70	2/5/92
<u>CB</u> A24	5,296,114	3/22/94	Manz	204	180.1	11/30/92
<u>CB</u> A25	5,296,375	3/22/94	Kricka, et al	435	291	5/1/92
<u>CB</u> A26	5,302,533	4/12/94	Kricka	436	537	4/10/92
<u>CB</u> A27	5,304,487	4/19/94	Wilding, et al	435	291	5/1/92
<u>CB</u> A28	5,306,621	4/26/94	Kricka	435	7.91	10/16/90
<u>CB</u> A29	5,328,578	7/12/94	Gordon	204	180.1	6/15/93
<u>CB</u> A30	5,331,159	7/19/94	Apffel, Jr., et al	250	288	1/22/93
<u>CB</u> A31	5,332,481	7/26/94	Guttman	204	182.8	11/13/91
<u>CB</u> A32	5,338,427	8/16/94	Shartle, et al	204	299	2/26/93
<u>CB</u> A33	5,349,186	9/20/94	Ikononou, et al	250	288	6/25/93
<u>CB</u> A34	5,374,834	12/20/94	Geis, et al	257	239	10/12/93
<u>CB</u> A35	5,376,252	12/27/94	Ekström, et al	204	299	11/10/92
<u>CB</u> A36	5,387,329	2/7/95	Foos, et al	204	415	4/9/93
<u>CB</u> A37	5,401,376	3/28/95	Foos, et al	204	415	3/11/94
<u>CB</u> A38	5,401,963	3/28/95	Sittler	250	288	11/1/93
<u>CB</u> A39	5,415,841	5/16/95	Dovich, et al	422	68.1	8/18/94
<u>CB</u> A40	5,421,980	6/6/95	Guttman	204	299	7/8/94
<u>CB</u> A41	5,427,946	6/27/95	Kricka, et al	435	291	1/21/94
<u>CB</u> A42	5,429,734	7/4/95	Gajar, et al	204	299	10/12/93
<u>CB</u> A43	5,486,335	1/23/96	Wilding, et al	422	55	4/24/95

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Applicant: James E. Moon, et al.

Serial No.: 09/698,329

Att'y Docket No. 14917.1.1

Filing Date: October 27, 2000

Group: 1741

For: INTEGRATED MONOLITHIC MICROFABRICATED ELECTROSPRAY AND LIQUID CHROMATOGRAPHY SYSTEM AND METHOD



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Examiner Initial*	Document Number	Publ Date	Country or Patent Office	Sub Class	Class	Translation
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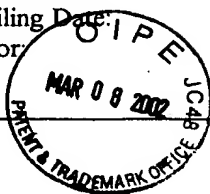
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While the filing of Information Disclosure Statements is voluntary, the procedure is governed by the guidelines of Section 609 of the Manual of Patent Examining Procedure and 37 C.F.R. §§ 1.97 and 1.98. To be considered a proper Information Disclosure Statement, Form PTO-1449 shall be accompanied by a copy of each listed patent or publication or other item of information and a translation of the pertinent portions of foreign documents (if an existing translation is readily available to the applicant), an explanation of relevance of each reference not in the English language, and should be submitted in a timely manner as set out in MPEP Sec. 609.

Examiners will consider all citations submitted in conformance with 37 C.F.R. § 1.98 and MPEP Sec. 609 and place their initials adjacent the citations in the spaces provided on this form. Examiners will also initial citations not in conformance with the guidelines which may have been considered. A reference may be considered by the Examiner for any reason whether or not the citation is in full conformance with the guidelines. A line will be drawn through a citation if it is not in conformance with the guidelines AND has not been considered. A copy of the submitted form, as reviewed by the Examiner, will be returned to the applicant with the next communication. The original of the form will be entered into the application file.

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The reference designations "A1," "A2," etc. (referring to Applicant's reference 1, Applicant's reference 2, etc.) will be used by the Examiner in the same manner as Examiner's reference designations "A," "B," "C," etc. on Office Action Form PTO-1142.

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